

DEPARTMENT OF COMMERCE

National Institute of Standards and Technology

Public Meeting to Announce an Opportunity to Collaborate With the National Institute of Standards and Technology (NIST) in a Program to Commercialize NIST's Transition-Edge-Sensor (TES) X-Ray Microcalorimeter Technology

AGENCY: National Institute of Standards and Technology, Commerce.

ACTION: Notice of public meeting.

SUMMARY: The National Institute of Standards and Technology invites interested parties to attend a meeting on August 8, 1997 to discuss the commercialization of NIST's transition-edge-sensor (TES) x-ray microcalorimeter technology. This is not a grant program.

The objectives of the meeting are: (1) Brief industry on the current status of NIST's microcalorimeter technology (to include a laboratory tour); (2) Discuss potential commercialization paths for the TES x-ray microcalorimeter technology involving US manufacturers, including: nonexclusive licensing with multiple companies, exclusive licensing with a single company, co-exclusive licensing with a limited number of companies, informal NIST/industry collaboration, cooperative research and development agreements (CRADAs), and industry consortia.

DATES: The meeting will take place on August 8, 1997, beginning at 10:00 a.m., Mountain Time.

ADDRESSES: The meeting will take place at NIST's Boulder, Colorado, facilities: Room 1107, 325 Broadway, Boulder, CO, 80303. Inquiries should be sent to Building 820, Room 213, National Institute of Standards and Technology, Gaithersburg, MD 20899.

FOR FURTHER INFORMATION CONTACT: Ernest R. Graf, Telephone: 301-975-2870; FAX: 301-869-2751; E-mail: egraf@nist.gov.

SUPPLEMENTARY INFORMATION: NIST's mission concerning its microcalorimeter technology is to provide to US manufacturers the methods and basic understanding that they need to provide and prove world leadership in performance, metrology, and quality of their products. The NIST microcalorimeter is in many ways superior to other low-temperature x-ray detectors. The current performance of the NIST microcalorimeter in terms of resolution, count rate, and collection solid angle makes it appropriate to consider commercialization.

There are currently four NIST patents/patent applications that are related to the microcalorimeter. At the August 8, 1997 meeting NIST will also discuss other patented technology necessary for the commercialization of the microcalorimeter. International patent protection is possible on the third and fourth NIST inventions described below.

(1) "Particle Calorimeter with Normal Metal Base Layer;" US Patent No. 5,634,718; issued June 3, 1997; NIST Docket No. 94-005; noticed in the **Federal Register** as available for licensing on March 22, 1995. The patent describes the use of a normal metal absorber in a microcalorimeter, which gives significant advantages in increased detector speed and uniformity. Other claims in the patent are use of a normal metal absorber in measuring energy events with particles or photons other than x-rays, and construction using a thermally insulating membrane, normal metal superconductor (NS) contacts for thermal isolation, normal metal insulator superconductor (NIS) tunnel junctions, superconducting quantum interference device (SQUID) readout, ridge structures for fast heat diffusion, multiple temperature sensors for position readout and greater uniformity, and electronic heat pulses for calibration. This patent covers many aspects of our microcalorimeters based on transition edge sensors.

(2) "Superconducting Transition Edge Sensor;" filed in August 26, 1996; NIST Docket No. 96-033; noticed in the **Federal Register** as available for licensing on May 8, 1997. The invention describes a reliable and manufacturable method of producing a superconducting film with a transition temperature that is tunable and in the range of interest (from approximately 50 to 300 mK.) The superconducting components to the bilayers are Al and Ti. Al-based bilayers are readily manufacturable, produce reproducible transition temperatures, can be readily incorporated with microfabrication technology, and have great advantages over other superconductors for this application.

(3) "Microcalorimeter X-ray Detectors with X-ray Lens;" filed March 5, 1997; NIST Docket No. 96-034; jointly owned with X-ray Optical Systems, Inc. The invention describes the combined use of polycapillary optics with microcalorimeter detectors. The invention enables present-day microcalorimeter spectrometers with areas under 0.1 mm² to have collection solid angles that are large enough for many practical applications. Although the construction of larger area detectors without capillary optics may be possible

in the future, the use of x-ray optics has fundamental advantages because they enable the use of small detectors, which consequently have faster count rates and higher resolution.

(4) "Improved Mechanical Support for Two Pill Adiabatic Demagnetization Refrigerators," to be filed in July 1997; NIST Docket No. 96-035. The invention mainly describes a practical implementation of dual Kevlar™ string mechanical supports that are needed in a two pill refrigerator. We believe this invention makes the supports easier to manufacture, assemble, and maintain in the field.

NIST anticipates that a challenge to the manufacturers of the above technology will be to understand, design, and manufacture the subsystems that are necessary to make the system operate; the patents themselves will not provide all the information needed.

Because the manufacturers may not be familiar with the technologies' underlying subsystems, such as the infrared blocking x-ray filters, adiabatic demagnetization refrigerator (ADR) construction, ADR control electronics, SQUID electronics readout, and detector manufacture and mounting, NIST offers the opportunity for a close working relationship to utilize NIST expertise to speed commercialization.

Dated: July 3, 1997.

Elaine Buntin-Mines,

Director, Program Office, The National Institute of Standards and Technology.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 062797B]

Endangered Species; Permits

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Issuance of modifications 3 and 4 to incidental take permit 844 (P5031).

SUMMARY: Notice is hereby given that NMFS has issued modifications to a permit to the Idaho Department of Fish and Game at Boise, ID (IDFG) that authorizes an incidental take of Endangered Species Act-listed species during sport-fishing activities, subject to certain conditions set forth therein.

ADDRESSES: The applications and related documents are available for